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Occupational Health and Safety Branch

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Industrial Chemical Labelling

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Urges federal gov't to look to OSHA model

Canada needs labelling standards, says Sass

Robert Sass, Director of Saskatchewan's Occupational Health and Safety Branch, has called for the federal government to impose labelling standards on industrial chemicals in Canada similar to proposed ones laid down by the U.S. Occupational Safety and Health Administration (OSHA).

In other words, Sass wants "generic labelling"—listing of chemical names of ingredients of brand-name products—in Canada for industrial chemicals.

"Millions of workers are exposed to unknown chemicals in Canadian workplaces every day," he says. "Some of these substances have caused disease and, occasionally, death. But nothing can be done because workers, and sometimes even their employers, do not know what these chemicals are.

"Adequate federal laws on labelling of industrial substances are urgently needed to protect worker health from this threat.

"Adequate labelling is part of the worker's right to know. Saskatchewan would like to do something on the provincial level, but we are frustrated by the lack of federal standards and regulations. The market in one province is too small to have sufficient clout if we were to try to force manufacturers to adequately label their products by passing provincial regulations to that effect."

All must be labelled

Sass says that the theory that not all substances needed be labelled, just dangerous ones, "is not acceptable.

"The problem is that nobody really knows whether a substance is 'dangerous' or not until it has been thoroughly tested."

And, he adds, testing is a drawn-out business, often seriously lagging behind the rate at which new chemicals are introduced—as witness the bogged-down testing programs of that National Institute for Occupational Safety and Health (NIOSH) and OSHA in the U.S.

"We can't wait for the verdict on whether a substance is 'dangerous' or not. If we do, it means that the chemical is considered 'innocent until proven guilty' and workers are, by default, treated as guinea pigs."

But Sass cautions that generic labelling by itself will not protect workers from dangerous substances. "But it will be a first step in that direction. In other words, labelling is necessary, but not sufficient, to protect workers.

Sass urges the federal government to look to the OSHA proposed "right to know" labelling standard as a model to follow. It covers five main issues: chemical lists; labelling; hazardous substance data sheets; employee education and training; and employee access to records.

Summarizes provisions

Here is Sass's summary of these provisions:

The first provision would require that, for each work area, lists of chemical names of hazardous and toxic substances, cross-referenced with common names, be posted or available for employee inspection.

The labeling provision would require that containers be marked prominently with common and chemical names. Also, exposure hazards, symptoms of exposure or overexposure, emergency treatment, and precautions for safe use and exposure would have to be displayed on the label.

Each employer would be required to obtain or develop a sheet for each hazardous or toxic substance used in the workplace. The sheet would include common and chemical names, description, hazards, emergency procedures, handling precautions, engineering and personal protective measures, procedures for cleanup of spills, and references to source material used to develop the list. Data sheets would be posted or otherwise made available to workers.

Employers would be required to institute training programs for employees normally exposed to chemicals. Training would include location, properties, and health effects of chemicals used; precautions for handling; purpose, proper use, and limitations of personal protective equipment such as respirators. Training would include the location of chemical lists and data

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sheets, also, as well as the contents of the standard.

Finally, regarding employee access to records, monitoring data and medical records would be made available to any affected employee, former employee, designated physician, or representative, upon request.

Could be watered down

Sass warns that the OSHA draft proposal might look good but it could be watered down in the review process. He also notes that the OSHA proposals only require data sheets for known hazardous or toxic chemicals. He says that for maximum employee protection all chemicals should be included on the data sheets.

Sass says Canada's lack of labelling standards for industrial chemicals are in contrast to the "generally good" labelling requirements for consumer use.

"Products packaged for industrial use are exempt from many of the labelling requirements of packaged products sold in retail stores. There is no valid philosphic reason to afford the citizen this protection as a consumer and, at the same time, deny it to him as a worker."

As for the objection that labelling gives away "trade secrets," Sass has this to say: "A manufacturer may feel he has a right to protect his 'trade secrets' from rival manufacturers, but the user of industrial chemicals has a valid counter-claim to information about what he is getting when he buys a product."

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By the way, we should mention that Sass's OH&S branch has something to be proud of, as well as Saskatchewan's NDP government which introduced in 1967 what is regarded to be the most advanced oh&s legislation in the country.

New figures show that work-related accident claims in Saskatchewan dropped to 35,997 in 1977 from 37,062 despite a steady growth in the province's labor force.

Average permanent disability awards dropped to $7,400 in 1977 from $10,940 in 1975, reflecting a decrease in the severity of accidents. The Saskatchewan legislation makes health and safety committees mandatory in every workplace employing 10 or more persons.

INDUSTRIAL CHEMICAL LABELLING:

THE NEED FOR CANADIAN REGULATIONS

by Robert Sass

and Richard Butler

May 1, 1979

ABSTRACT

In late 1977, the U.S. Occupational Safety and Health administration (OSHA) proposed a draft standard on industrial chemical labelling, also known as the "right to know" standard. Some observers expect the promulgation of a permanent standard any time now. Yet Canadian public awareness of this proposed U.S. standard and, indeed, of the importance of the issue of industrial chemical labelling to the health of the Canadian workforce, is generally very low. The OSHA proposed "right to know" labelling standard covers five main issues: chemical lists; labelling; hazardous substance data sheets; employee education and training; and employee access to records.

This paper advances the thesis that Canada needs a labelling standard similar to the OSHA proposed draft standard, and the principle that labelling should be required for all chemicals used in the workplace and not just known hazardous substances. Recent U.S. experience has shown that: (1) as long as chemical manufacturers and formulators are allowed to use trade names alone (i.e., in the absence of generic and chemical names), they will regularly neglect to alert the user to ingredients that are known hazardous substances and (2) it can be predicted that many substances not now recognized as hazardous will in future prove to be so.

In this paper, six pieces of Canadian federal legislation--the Environmental Contaminants Act, the Consumer Packaging and Labelling Act, the Hazardous Products Act, the Pest Control Products Act, the Food and Drugs Act, and Bill C-47 regarding the Transportation of Dangerous Goods--are examined to reveal that existing legislation related to labelling does not provide the protection to workers that the OSHA proposed draft standard on industrial

chemical labelling would provide. Some provincial legislation is also briefly examined.

Millions of workers are exposed to unknown chemicals in Canadian workplaces every day; some of these substances could cause (indeed, some already have caused) disease and even death; but nothing can be done because workers, and sometimes even their employers and government regulators, do not know what these chemicals are. Adequate federal laws on labelling of industrial substances are urgently needed to protect worker health. There is a need for the concerted action of the provinces and the federal government to formulate policy on this issue and to take legislative action. And there is a need for the issue to be made public so that it can be debated openly in order to best arrive at a conception of the best interests of Canadians.

In late 1977, the U.S. Occupational Safety and Health Administration (OSHA) proposed a draft standard on industrial chemical labelling, also known as the "right to know" standard. During 1978, the draft has been widely circulated in the United States among public interest groups, labour organizations, and manufacturers' associations for comment.[1] Some observers expect a promulgation of a permanent standard any time now.

Once a permanent standard comes into effect, the impact on the Canadian industrial workplace and on worker health will be great--though, of course, of a lesser order than on the United States workplace and workforce. Yet Canadian public awareness of this proposed U.S. standard and, indeed, of the importance of the issue of industrial chemical labelling to the health of the Canadian workforce, is generally very low.

Unfortunately, there is room for doubt whether the permanent standard will ever come into effect, or at least justification for concern that it may be watered down--in view of the protracted litigation which most OSHA standards have encountered. But there is no justification, on this basis, for ignoring the proposed draft standard.

If the permanent standard is attained, and if it is anything like the proposed draft standard, it will have a number of positive effects on health in the U.S. workplace, including the following: Containers of chemical substances, now usually identified only by a trade name, manufacturer's code number, or not labelled at all, will be marked prominently, at the point of manufacture, with common (generic) and chemical names[2]--thus allowing the worker, his union representative, or his physician to become alerted to possible exposure to carcinogens or other hazardous substances. Exposure hazards,

symptoms of exposure or overexposure, emergency treatment, and precautions for safe use will be displayed on the label. Chemical lists, indicating chemical names of hazardous and toxic substances, cross-referenced with common names, will be posted in workplaces. Employers will have in their possession for quick reference more detailed hazardous substance data sheets. Employee education and training programs regarding chemical hazards will be put into effect. Employees will have access to relevant monitoring data and to their exposure and medical records.

What will be the effect on Canada of the passing of the U.S. permanent chemical labelling standard? That will depend on a number of factors, many of which will be out of our control, especially if Canadians are largely taken by surprise. To be optimistic, we can perhaps anticipate some positive spin-offs in Canada. Many U.S. manufacturers may simply provide the same improved labels for the Canadian market as they must place on their products for the U.S. market. (Also, Canadians would presumably be able to obtain hazardous substance data sheets which the U.S. manufacturer would have available for U.S. employers.) If this approach seems to be cheaper for them than providing different labels for the different markets, then Canadian workers will gain information important to their health, without Canada having to go through the discussion and lobbying that the United States is now going through, and the legislative and regulatory processes that will later be required. It will be another case of Canada (and other nations) profiting from United States leadership.

But this optimistic view may prove to be woefully unrealistic. To be prepared for the worst, we must consider the possibility of Canada ending up on the receiving end of a "dumping" policy, whereby U.S. firms would send old stock, with the old labels, to the Canadian market. At first glance this might seem to be a fairly innocuous spin-off: after all, if Canada is now

accepting these products, continuing to accept them in the future will not subject Canadian workers to any new dangers. However, it has already been discovered in the United States that many industrial chemicals now in use are hazardous, and if correctly identified, would be subject to strict controls. That is, they are actually considered dangerous right now, but are being used under trade names which hide their true nature from both the user and the government regulatory agency. As one writer, commenting on a recent National Institute for Occupational Safety and Health (NIOSH) occupational hazards survey, put it: "Of those 45,000 trade name industrial chemical products about which NIOSH had ingredient information 45 percent, almost one-half, contained a chemical that was then regulated by OSHA, that is, was either on the TLV list, or was one of the 16 carcinogens then regulated by OSHA."[3] Thus the danger is that, when the regulation process is tightened up in the United States through a strong chemical labelling standard, and certain products can be used there only under tight controls or not at all, then chemical manufacturers (the multinationals, especially) might be tempted to "dump" stocks of these dangerous substances in countries without adequate labelling legislation, and further, might continue to manufacture dangerous substances (under old or new trade names, but not generic or chemical names) for these markets. In the United States it is still possible, for example, to manufacture and formulate pesticides for export even when they contain ingredients which have been banned from use in that country--such as kepone, DDT, aldrin, dieldrin, chlordane, heptachlor, 2,4,5-T, and EBDC.[4]

Still, the "optimists" (and others who do not wish to see industrial chemical labelling become an issue in Canada) may argue that Canada already has sufficient federal and provincial legislation and regulation to control chemicals in the workplace, no matter what may happen in the United States or any other country. Some of the major relevant Canadian legislation

will be briefly analyzed, with this point of view in mind, in this paper. But first it is necessary to clarify what is meant by "labelling" and to provide some of the U.S. background of this issue.

When labelling is discussed, there arises the possibility of confusion and arguing at cross-purposes when the area of application is not clearly understood. For purposes of this paper, three rough, informal categories (in which there is, admittedly, some overlap) may be identified. These are: 1) the application of labelling to the transport of large bulk quantities of substances whose hazardous properties are well known; 2) the application of Department of Transport labelling regulations (or adaptations of them) to the workplace; and 3) the application of specially formulated labelling regulations to all chemicals used in the industrial workplace (and not just to a limited number of known and acknowledged "dangerous" or "hazardous" chemicals).

Taking the first category, the application of labelling to the transport of large bulk quantities of substances whose hazardous qualities are well known, we are dealing with such things as rail, road, waterway and air transport of gasoline, chlorine, ammonia, sulfuric acid, high explosives and the like. Presumably all modern nations have some regulations, usually under the authority of the Department of Transport or its equivalent, pertaining to these. Effects of these substances on safety and/or health, in the event of accidental exposure, spill, ignition, etc., would be immediate and obvious. There may be some minimal application of regulations covering transport of bulk quantities to workplace situations--for example, to the loading and unloading of railcars, semi-trailer trucks, or other load-carrying vehicles. But such an application would in no way provide the protection to workers that the OSHA proposed draft standard is intended to provide.

In 1975, the U.S. Department of Transport put into effect a new system of labelling and placarding for the transportation of hazardous materials. The symbols used under this system were not entirely novel, but, as in earlier U.S. regulations, conformed largely to (or were built upon) those proposed by the International Labour Organization (ILO) in 1954 (viz., a stylized exploding object for "danger of explosion", a skull-and-crossbones for "danger of poisoning", etc.). The major new aspect of the system was the addition of 100 numbered categories (for example, "85" means "Corrosive--combustible--poison"). Also, a new symbol--a stylized eye with a tear drop for "Irritant"--was introduced, and the "Potential Hazard" of "Health" effects was recognized.

This United States DOT standard provided the basis for a short article on a suggested labelling system for the workplace. The author asked the rhetorical question, "Couldn't the idea behind DOT requirements be applied to in-plant handling of hazardous materials?"[5] This, then, is an example of our second "labelling" category, the application of Department of Transport regulations (or adapations of them) to the workplace.

Such articles appear from time to time in the safety literature. For example, in the August 1978 edition of the Industrial Accident Prevention Association (IAPA) publication Accident Prevention, an article entitled "Inmont launches new labeling program" outlines a system whereby "a series of standardized, multi-color labels is used to identify the exact type of hazard involved with a material." The article goes on, "These high-visibility, diamond-shaped labels, applied at the receiving dock, also give precise instructions for handling the particular material."[6] Another article on this topic, entitled "A system for labeling and control of toxic materials in a large research facility," was recently published in the American Industrial

Hygiene Association Journal. Part of the abstract of the article reads: "...A system utilizing cards has been developed which serves a dual purpose--informing the user regarding hazards of a particular material and also facilitating appropriate workplace surveillance during its use. Selected data is printed on the card. The card contains a label which the user detaches and affixes to the container. This label classifies the material according to flammability, toxicity, reactivity and special properties on a 0 through 4 hazard rating system."[7] While such in-plant programs are commendable when they occur, they point up the fact that, because of inadequate legislation regarding industrial chemical labelling for the workplace, such programs are the exception and not the rule.

In the United Kingdom, new Packaging and Labelling of Dangerous Substances Regulations have been passed (these came into force on September 1, 1978 for containers with a capacity of 200 liters or more, and on March 1, 1979 for containers with a capacity of less than 200 litres).[8] Symbols based largely on the ILO model are used to represent the following hazards: explosive, highly flammable, toxic, corrosive, flammable, oxidizing, irritant and harmful. In addition, the regulations require each label to carry: one or more "risk" phrases" giving more detail on the main dangers (e.g., "Very toxic in contact with the skin"); one or more "safety phrases" giving advice on sensible safety precautions (e.g., "Wear suitable protective clothing"); and, the name of the chemical and name and address of the supplier or manufacturer, which may assist doctors or first-aid staff in the event of an accident.

These new British regulations apply quite definitely to industry as well as to the home. Thus they do provide the worker some protection. Also the requirement that the name of the chemical be provided is very important. Some problems in the latter area may be anticipated, however, because the

requirement to name the chemical may be construed by some manufacturers as a violation of their right to protect their trade secrets. One chemical manufacturer in the United Kingdom has already expressed its reluctance to reveal the composition of its products. Acting as a spokesman for Du Pont (U.K.) Ltd., the company's secretary and legal adviser, T.G. Wright, has said: "There is no way we are going to disclose this if the next thing we know there is the danger of it being made public to the workforce and unions of our direct and indirect customers, bearing in mind that many of those unions are also the unions of our competitors.... We would never conceal anything that to our knowledge might harm the health or safety of our customers or their employees."[9]

The new Packaging and Labelling of Dangerous Substances Regulations in Britain apply to about 800 dangerous chemicals used in industry. They may be taken as a good example of what we have identified as our second labelling category. That is, they follow the model of Department of Transport regulations, extending them somewhat, applying them to the workplace, and requiring that the name of the chemical be given. However, they do not apply to all chemicals used in the workplace, but only to certain recognized "dangerous" chemicals. Nor do they adequately address the problem of potential health hazards from low-level exposures over a period of time.

Our third category of labelling regulations applies to all chemicals used in the industrial workplace (not just to a limited number of known and acknowledged "dangerous" or "hazardous" chemicals). The best example of this type of regulations is the OSHA Draft of Proposed Chemical Labeling Standard, as put forward for discussion in late 1977. This standard would apply to "any chemical in the workplace which is: (i) A hazardous substance; (ii) A toxic

substance; or (iii) a substance likely to be inhaled, ingested, or absorbed through the skin." The OSHA draft's category (iii) is most important, for it requires labelling for virtually all chemicals used in the workplace. Labelling as envisioned by the OSHA draft standard would, of course, be applied at the point of manufacture or formulation. It serves little purpose to require the employer to provide proper labelling when he usually does not know the ingredients of the trade-name products used in his plant.

The principle that labelling should be required for all chemicals used in the workplace is based on recent U.S. experience which shows that: (1) as long as chemical manufacturers and formulators are allowed to use trade names alone (i.e., in the absence of generic and chemical names), they will regularly neglect to alert the user to ingredients that are known toxic substances, hazardous substances, carcinogens, mutagens, or teratogens; and (2) it can be predicted that many substances not now recognized as hazardous, toxic, carcinogenic, mutagenic or teratogenic, will in the future prove to be so.

The statement that when chemical manufacturers are allowed to use trade names alone they will regularly neglect to alert the user to harmful ingredients is based on the findings of the U.S. National Occupational Hazard Survey (NOHS) conducted by the National Institute for Occupational Safety and Health (NIOSH) between 1972 and 1974. NIOSH conducted the Hazard Safety to determine the extent of worker exposure to toxic substances. The study covers over 900,000 workers in 4,700 plants from a broad cross-section of industry by size and type.

The National Occupational Hazard Survey is referred to in a U.S. House of Representatives Report entitled "Chemical Dangers in the Workplace" and dated September 27, 1976.[10] The following are some quotations from this

document, which clearly state the U.S. experience:

> Both employers and employees are often unaware of the toxic chemicals in the trade-name products that they buy and use. An extensive NIOSH survey shows that toxic chemicals are found in almost half of the trade-name products and that 90 percent of the time the chemical composition of trade-name products is not known to the buyer or user. (p. 4)
>
> Manufacturers and formulators of trade-name products often do not disclose the contents of their products on the grounds that such information is a trade secret or proprietary information. These claims are made for products that contain toxic chemicals, including known carcinogens. (our emphasis) (p. 4)
>
> Identifying products by trade name is sometimes quite deliberate on the part of the manufacturer. To date, NIOSH has received product ingredient information on over 40,000 trade name products; for 10,000 of these the manufacturer has designated the contents a trade secret. In the chenical products whose ingredients are not revealed because the manufacturer considers them a trade secret, 5,760, or 53 percent of the products identified by trade name, contain chemicals regulated by OSHA because they are hazardous. (our emphasis) (p. 11)
>
> The committee believes that it is unconscionable for companies to incorporate toxic substances, including those known to cause cancer, into products that they sell while refusing to disclose this fact.(p.11)
>
> It is clear that the major objectives of the [OSH] Act override narrow self-interest on the part of the manufacturers. No trade secret can justify exposing great numbers of American workers to cancer-causing agents or other toxic chemicals. Any trade-name product containing a substance known to be hazardous or a carcinogen must be clearly labelled so that precautions may be taken. (p.11)

With this knowledge of the U.S. experience, Canadian regulators clearly would be remiss if they should continue to assume that, just because manufacturers are required to reveal toxic and hazardous ingredients in their products, that they will do so. If the ingredients of all industrial chemicals must be revealed, then it will be much more difficult for manufacturers to hide dangerous substances behind trade names.

The statement that it can be predicted that many substances not now recognized as dangerous will in the future prove to be so is substantiated by many recent trends and findings. For example, when it is realized how many chemicals now exist, how many are being introduced each year, and how few of these have been, or are likely to be tested, then the conclusion immediately

follows that probably many of these really are dangerous, but have not yet been identified as such. Again, some quotations from the U.S. Government Operations Committee report, "Chemical Dangers in the Workplace", reveal the extent of the problem:

> About two million chemical compounds exist today and thousands of new chemicals are being created every year (p. 6)
>
> ...there have been few studies on the potential toxic effects of new chemicals, processes, and products. Very little is known about the additive or synergistic effects of exposures to more than one chemical substance. (p.6)

When carcinogens (or potential carcinogens) in particular are considered, it is clear from the literature that experts realize that there must be a great many substances that are carcinogenic, but not yet recognized as such. One such expert is Dr. Thomas H. Corbett, who received an award from the U.S. Environmental Protection Agency recently for his work in exposing a mass contamination of animal and human food by PBBs (polybrominated biphenyls) in the state of Michigan. In the Introduction to his book Cancer and Chemicals, he writes:[11]

> Statistics now show that the United States has one of the world's highest incidences of cancer associated with environmental pollution. The increase in cancer rates observed today is the result of exposure twenty years ago to cancer-producing chemicals. Considering the thousands of untested new chemicals introduced into the environment each year, the incidence of cancer should skyrocket to epidemic proportions by the beginning of the twenty-first century.... Although most of these chemicals are not dangerous, the few that are could decimate our population if used indiscriminately. The dangerous chemicals must be screened and prohibited before they are used in products or manufacturing processes.

In the United States, the new Toxic Substances Control Act which went into effect on January 1, 1977, gives the Environmental Protection Agency authority to require premarket testing and notification of new chemical substances. It would be naively optimistic, however, to assume that this mechanism will assure that dangerous substances will no longer continue to be introduced

into industry in the United States. Also, as we have seen, many of the substances now in use may be carcinogenic but not recognized as such.

Whenever a substance, new or old, is discovered to be carcinogenic, or otherwise dangerous, workers can be expected to want to know whether or not they are being exposed, or have been exposed, to that substance. They will not be able to ascertain that unless all substances used in the workplace are provided with labels which disclose their ingredients.

Dr. Umberto Saffiotti, head of the carcinogenesis branch of the U.S. National Cancer Institute, has spoken of the importance of alerting the public to "preliminary" findings about carcinogenicity suspected in chemicals, but not yet proven. Although he does not discuss the chemical labelling issue per se, his views on alerting the public to possible hazards, as reported in Corbett's Cancer and Chemicals, are very relevant to this issue:[12]

> "We learned a lesson from DDT, dieldrin, and other chemicals where the first data indicating a hazard was available years before action was finally taken to protect the public. The alert is a new type of action to keep us from sitting on a very important observation that may help people protect themselves from a cancer hazard."
>
> He was referring to the several years that had passed between the discovery by Van Duuren that bis (chloromethyl) ether caused cancer in animals and the protection of workers from the chemical. It also took several years for workers to be protected from vinyl chloride.

Workers have a legal right, in the U.S. under the OSH Act and in Canada under certain provincial and federal occupational health and safety laws--and everywhere a moral right--to know just what hazards and possible hazards they are exposed to, even when the evidence is only of a preliminary nature. Then they can appeal to protection under the law where it is provided, seek other means of protection, or accept the hazard (or possible hazard), as they see fit.

When the worker's legal right to know what hazards he is exposed to, under certain Canadian provincial and federal laws, is mentioned, this of course brings up the question--Just how adequately does existing legislation provide such a legal right in practice? Perhaps there is no need for a Canadian federal standard comparable to the OSHA draft proposal, if existing legislation and regulations serve the purpose.

A good place to start a search of existing legislation to see what laws and regulations now apply to the labelling issue, is the Science Council of Canada series of reports and background studies on regulation of dangerous substances. These include: Report No. 28, Policies and Poisons; Background Study No. 39, Canadian Law and the Control of Exposure to Hazards; and Background Study No. 41, Regulatory Processes and Jurisdictional Issues in the Regulation of Hazardous Products in Canada. In Background Study No.41, the author, Bruce Doern, lists fifteen pieces of legislation in Table 1, "Federal Agencies Administering Major Legislation Related to Occupational and Environmental Health and Safety". Since the publication of that list in October 1977, at least one more Bill with some relevance to the labelling issue has been before Parliament--viz., Bill C-17, regarding the transportation of dangerous goods, which when passed will come under the jurisdiction of Transport Canada.

A line-by-line search of sixteen pieces of legislation seems a formidable task, but even a cursory reading can give a general impression of the thrust of the traditional approach, if one looks at this legislation with a few basic principles in mind. We want to know the answers to such questions as these:

Does current legislation provide the same protection to the worker in industry as it does for the consumer? Does it deal with labelling of

chemicals in containers used in the workplace as adequately as it deals with such substances when transported in large vessels? Is labelling restricted to known hazardous substances which have obvious and immediate effects, or does it also apply to any chemical substance, providing information as to the ingredients of trade-name products? Where labelling is required, is it the responsibility of the employer, or of the manufacturer or formulator (as it should be)? Does the legislation reflect an adequate awareness of the dangers and potential dangers of chemical substances in terms of long-term, chronic health effects, or is it limited to concern for immediate safety factors and acute health effects? In a word, we are asking if present legislation reflects an awareness of the latest trends in occupational health and safety--viz., more emphasis on health, to balance the traditional concern with safety; more awareness of the threat to worker health of the post-World War II proliferation of chemicals in industry; an awareness of the implications of the long latency period of many carcinogens; and an awareness of the dangers of possible synergistic effects of chemicals (that is, the possible toxic effects of chemicals, which may be innocuous alone, acting in combination in the workplace).

With such questions as these in mind, one cannot help but be struck by the fact that the Science Council of Canada studies are limited by their terms of reference to an investigation of six known hazards--viz., asbestos, lead, mercury, oxides of nitrogen, radiation, and vinyl chloride. This in itself suggests a mind-set in Canada limited to known hazardous substances (and only six of them at that) and unaware of the trend towards concern for identifying <u>all</u> substances in recognition of possible long-term health effects being revealed in the future, in some substances now believed to be harmless.

The Environmental Contaminants Act is identified in the Science Council of Canada Background Study No. 39 as the most general of all federal contaminants control statutes. It is similar to the U.S. Toxic Substances Control Act in that its intent appears to be to establish a pre-marketing screening requirement for new chemical substances. The mechanisms of the Act can be put into operation, however, only where there is sufficient evidence to suggest a potential problem. That is, the burden of proof under this Act is on Environment Canada, the department which administers the Act. The Science Council study states (quoting the Act): "The authorities under the Act must 'be satisfied' that a substances 'is...or will constitute a significant danger in Canada...to human health or the environment' before it can be added to the Schedule of prescribed substances. Danger to human health or the environment must be 'suspected' by the authorities before they can begin to investigate and collect data on a substance. They must 'have reason to believe' that a substance will constitute a significant danger to human health or the environment before the manufacturer can be compelled to disclose information on the substance." Also, like the U.S. Toxic Substances Control Act, the Environmental Contaminants Act is intended to apply to chemicals being introduced into the market for the first time. This leaves thousands of untested chemicals now on the market to remain untested.

All of these restrictions on the regulatory agency indicate that the Environmental Contaminants Act by itself, is hardly adequate to provide the kind of protection to workers that good labelling legislation, following the OSHA draft proposal, would provide. (Of course this legislation has its place; it and good industrial chemical labelling legislation would be complementary.) Yet this legislation is probably the best that Canada has to control contaminants. The Science Council of Canada Background Study No. 39 explains that the burden of proof under the Environmental Contaminants Act is on Environment Canada, and in this respect the Act accepts the principle of the inviolability

of the manufacturer's trade secrets. The study goes on, however, "the Minister [of the Environment] may...issue notices to require importers, manufacturers and processors of particular substances to provide specified information regarding quantities of substances. Thus it is possible that in practice the mandatory reporting requirement could be used to shift the burden of proof, or at least a significant evidentiary burden, to manufacturers and importers of potentially hazardous substances." The study also states, "there is a mandatory reporting requirement for anyone who imports or manufactures more than 500 kg of a chemical compound for the first time. Any available information respecting danger to human health or the environment must be disclosed." In summary, this legislation, the most general of all federal contaminants control statutes, and therefore the one which might be applied to workplace chemicals, provides some potential protection along the lines of the U.S. Toxic Substances Control Act, but can in no way provide the needed labelling requirements of the OSHA Draft Chemical Labelling Proposal.

Besides the Environmental Contaminants Act, five more federal statutes will be briefly examined to illustrate the inadequacy of present legislation and regulations regarding the labelling of workplace chemicals. These are: the Consumer Packaging and Labelling Act (administered by Consumer and Corporate Affairs); the Hazardous Products Act (administered by Consumer and Corporate Affairs and, in sections 9 and 10, also National Health and Welfare); the Pest Control Products Act (administered by Agriculture Canada); the Food and Drugs Act (administered by National Health and Welfare, Health Protection Branch); and Bill C-17, regarding the Transportation of Dangerous Goods (which is to be administered by Transport Canada).

The Consumer Packaging and Labelling Act, and more particularly the regulations under this Act, provide for common or generic names of products being displayed on the label. Regulation 14 (b) states: "The following information shall be shown on the principal display panel:...the identity of the prepackaged product in terms of its common or generic name or in terms of its function." We have here the essence of one of the key terms of the OSHA Proposed Draft Standard, although an alternative to the common or generic name is provided, viz., identification of the product "in terms of its function." The Consumer Packaging and Labelling Act, however, is not intended to provide protection to workers, but only to consumers. This is made clear in Regulation 3(1): "Prepackaged products that are produced or manufactured for commercial or industrial enterprises or institutions for use by such enterprises or institutions without being sold by them as prepackaged products to other consumers are exempt from all the provisions of the Act." Thus if we wish to find Canadian law which protects the citizen as worker to the same extent as the citizen as consumer is protected, we shall have to look elsewhere for it.

The Hazardous Products Act, as its name applies, is intended to apply to known hazardous products only. Moreover, being administered by Consumer and Corporate Affairs, it is intended to protect the consumer and not the worker. A brief overview of this Act reveals some interesting characteristics. In this Act, a "hazardous product" is one which is included on one of two lists. Products on the first list, Part I of the Schedule, are disallowed. These include such products as jequirity beans; children's furniture finished with lead paint; toys containing carbon tetrachloride, methyl alcohol, petroleum distillates, benzene, etc.

Section 3(1) states: "No person shall advertise, sell or import into Canada a hazardous product included in Part I of the schedule." Note that there is no prohibition regarding the use of such products in the workplace, as long as they are not imported, and as long as they are not advertised or sold to consumers. Products on the second list, Part II of the Schedule, are not disallowed, but are subject to regulation. These include such products as bleaches, cleansers, etc., containing chlorine; corrosive chemicals; petroleum distillates; certain products containing toluene or acetone; pressurized cans; etc. The intent of this Act is such that any new product introduced onto the market is presumed "innocent" until proven "guilty"; that is, the burden of proof is on the Minister of Consumer and Corporate Affairs regarding the hazardous nature of any new product. Section 10(1) states: "Where the Minister has reason to believe that a product or substance is a product or substance that may be added to Part I or Part II of the schedule..., he may send a written notice to the manufacturer of the product or substance requesting him to disclose to the Minister the formula, composition or chemical ingredients of the product or substance and such other information in the possession of the manufacturer as the Minister deems necessary for the purpose of determining whether the product or substance is or is likely to be a danger to the health or safety of the public." (our emphasis)

Special provision is made in the Hazardous Products Act to ensure, when the Minister requests the formula etc. of a product, that the manufacturer's trade secrets are protected. Section 10(3) states: "Information received by the Minister from a manufacturer pursuant to subsection (1) is privileged and shall not be disclosed to any other person except as may be necessary for the administration or enforcement of this section...." Thus

the disclosure on a label of the ingredients of a product which has not yet been identified as hazardous could not be required under this Act. Again, we find that existing Canadian legislation does not provide the worker the protection that he needs, and what would be provided under the OSHA proposed labelling standard. Under the Hazardous Products Act, it is only after a substance has been proven to be hazardous that it can be either disallowed under Part I of the Schedule, or made subject to carrying a "warning in print and by symbol showing the nature and degree of hazard" under Part II of the Schedule.

The regulations under the Pest Control Products Act are quite stringent, and would provide much of the protection provided by the proposed OSHA standard, if they applied to all chemicals used in the workplace, and were not limited to pest control products. In Section 6 of the Regulations, we find that every control product imported into or sold in Canada must be registered; that is, there is a presumption that a control product may be hazardous. Unlike the Hazardous Products Act, in which the Minister of Corporate Affairs has to have "reason to believe" that a product may be hazardous before he can request disclosure of the chemical ingredients of the product, the Pest Control Products Act regulations state, in Section 9(1), that "...an applicant shall provide the Minister [of Agriculture] with such... information as will allow the Minister to determine the safety...of the control product." In Section 9(2)(a)(ii), protection to workers is provided: "...where a control product is a device that has not been previously assessed or evaluated for the purposes of the Act and these Regulations or contains an ingredient that has not been so assessed or evaluated, the applicant shall provide the Minister with the results of scientific investigations respecting the safety of the control product to persons occupationally exposed to it when it is manufactured, stored, displayed, distributed or used."

Under section 17 of the Regulations, the Minister of Agriculture can effectively ban the use of a control product by refusing to register it. He can do this if the applicant has not followed the regulations, if the applicant has failed to supply the Minister with sufficient information to evaluate the control product, or if, in the opinion of the Minister, the use of the control product would lead to an unacceptable health (or other) risk.

Section 26 of the Pest Control Products Regulations provides detailed requirements for labelling. Subsection (1) states that "no label shall be used on a control product unless it has been approved by the Minister...." Subsection (2) (a) deals with requirements for display of the common name of the product's active ingredient. Subsection (2)(l) spells out requirements for first aid instructions on the label. Subsection (2)(m) provides standards for toxicological information when it is required on the label.

Section 54 of the Pest Control Products Regulations deals with control products imported into Canada. The importer of such a product must sign a declaration stating, among other things, "the common name or chemical name of the active ingredient of the control product...." Thus the Pest Control Products Act and its regulations provide stringent regulation, apparently on the assumption that if a substance is intended to kill pests, it may well be hazardous to other living things, including humans. The absence of such regulations for workplace chemicals seems to be based on the doubtful assumption that such chemicals <u>are not</u> likely to be harmful to humans, except in particular cases where their danger has been proven.

<u>The Food and Drug Act</u> obviously does not apply to chemicals or other substances used in what we usually think of as the industrial workplace. Drug manufacturing laboratories, pharmacies, confection manufactories, food preparation areas and storage areas for foods or drugs are workplaces, however, and so there is some limited application. Moreover, as in our examination of

other legislation, it is interesting to see what kinds of regulation exist in areas other than that of industrial chemicals. Labels are required for all prepackaged foods (with two minor exceptions), for horse-meat, food additives, flour that has been treated with gamma radiation from a Cobalt 60 source, and a few other classifications. The labelling requirements for drugs are, as one would expect, quite stringent. One of the most interesting requirements, from the point of view of our investigation, is that of the proper name or, if there is no proper name, the common name, to be provided on the label, in addition to the proprietary or brand name. The OSHA draft standard for chemical labelling would require the chemical or generic or common name of the ingredients of workplace substances to be provided on the label.

Bill C-17, which received first reading in November of 1978, will when passed be known as the Transportation of Dangerous Goods Act, and will be administered by Transport Canada. As in the case of the Hazardous Products Act, the Transportation of Dangerous Goods Act will not apply to all chemicals, but only to acknowledged hazardous or "dangerous goods." Such products, substances or organisms will be listed in a schedule. Moreover, the application of the Act will be only to such goods in transport, and not generally, in the workplace. Nevertheless, as in the case of other legislation discussed in this paper, it is of interest to examine some of the clauses of this Bill.

In Section 2(1), the phrase "handling for transportation" is interpreted in such a manner that there is some limited workplace application. Such handling "includes any activity of or related to loading, packing or placing dangerous goods in containers, packages or means of transport in the course of or before transportation, unloading, unpacking or removing goods from containers, packages or means of transport in the course of or after transportation, reloading, repacking or replacing dangerous goods in con-

tainers, packages or means of transport in the course of transportation and storing dangerous goods in the course of transportation."

Sections 6 and 7 are of interest in that they provide authority for coordination of this legislation with programs of other government agencies, federal or provincial. Since much of occupational health and safety falls under provincial jurisdiction, and since there is a need for nation-wide coordination on, for example, a labelling policy, it is interesting that some coordination is anticipated and provided for here.

Section 17 of Bill C-17 provides for the authority of the Governor in Council to make regulations on, among other things, the labelling of dangerous goods in transport. The Governor in Council may make regulations "prescribing safety marks, safety procedures and safety standards applicable to dangerous goods or any classes, divisions or subdivisions thereof and containers, packages and means of transport used in the handling for transportation or transporting thereof."

As in the Hazardous Products Act, Bill C-17 provides for protection of the manufacturer's trade secrets. The Minister of Transportation may request the formula or chemical ingredients of any substance from the manufacturer, but (according to Section 19(1)) only where he "has reason to believe" that the substance in transport constitutes dangerous goods. That is, there is an onus on the Minister to have a reason for suspecting such goods as being dangerous. Moreover, when the information is disclosed by the manufacturer, it must be regarded as privileged, under subsections (4) and (5) of Section 19.

One more point of interest to our discussion of workplace chemicals is the limitation placed on the application of this legislation in terms of

quantities and concentrations. Section 23(3)(a) states: "This Act does not apply to the handling for transportation or transporting of dangerous goods in any quantities or concentrations not exceeding those fixed by the regulations as minimum quantities or concentrations for the purpose of this Act." The intent of this legislation is, of course, that it should apply to large quantities (such as are found in transporting of goods) and not to the smaller quantities found in the workplace, and to high concentrations (such as might constitute an immediate hazard) and not to lower concentrations which might be hazardous only under conditions of continued exposure, as might occur in the workplace.

This brief examination of six pieces of legislation--the Environmental Contaminants Act, the Consumer Packaging and Labelling Act, the Hazardous Products Act, the Pest Control Products Act, the Food and Drugs Act, and Bill C-17 regarding the Transportation of Dangerous Goods--while not exhaustive, should establish a prima-facie case for the need for better regulation of chemicals in the workplace. We raised a number of questions regarding existing legislation earlier, and now we can respond to them.

- The legislation examined does not provide the same protection to the worker in industry as it does for the consumer. As we have seen, the Consumer Packaging and Labelling Act, in Section 3(1) of the Regulations, deliberately excludes any possible application to products used in the workplace. The Pest Control Products Act affords some protection to workers who handle such products, but again, a small percentage of industrial workers would fit into this category. And the other legislation examined has little, if any, application to protection of the worker. So the question can be raised--What possible justification can be made for a policy of protecting the citizen, as consumer, and denying him such protection, as a worker?

In the early years of this century before the introduction of Workmen's Compensation, it used to be argued that workers "assumed the risks" of their chosen occupations. But how could even this retrogressive argument be sustained against labelling, when the worker is being denied knowledge of what risks he is supposedly assuming?

o The legislation does not deal with the labelling of chemicals in containers used in the workplace as adequately as it deals with such substances when transported in large vessels. This exclusion is made explicit in Section 25(3)(a) of Bill C-17, as we have just seen. Again, while such an exclusion is perfectly understandable in Transport legislation, it is not justifiable in terms of over-all policy. The point is that the worker has again been left out, and there is no legislation at the present time to fill the gap.

o Under the existing legislation (with the exception of Consumer Packaging and Labelling, which has no application for workers, and of Pest Control Products legislation, which protects only a small percentage of workers), labelling is restricted to known hazardous substances which have obvious and immediate effects, protection of trade secrets being a priority in the Hazardous Products Act and Bill C-17.

o Where labelling is required, under the Hazardous Products Act and the Pest Control Products Act, for example, it is the responsibility of the manufacturer or formulator, and not the employer. But, again, few workplace chemicals are covered.

o The legislation generally reflects little or no awareness of the dangers and potential dangers of chemical substances in terms of long-term, chronic health effects. It is, rather, largely limited to concern for immediate

safety factors and acute health effects. Under the Environmental Contaminants Act and the Hazardous Products, for example, as we have seen, the burden of proof is on the regulating authority to show that a substance is hazardous--and such proof is difficult or impossible to provide in the case of most long-term, chronic health effects, especially in the case of a newly introduced chemical.

In a word, present Canadian legislation for the regulation of dangerous or potentially dangerous substances which may be used in the workplace does not reflect an awareness of the latest trends in occupational health and safety concerns.

The six federal statutes examined above were dealt with first, because they have Canada-wide application. In order to be effective, regulations for the labelling of industrial chemicals should have nationwide application. However, it is of interest to examine some legislation applying to a more limited jurisdiction.

The Canada Labour Code, although it is a federal statute, has relatively limited application. It applies to employers and employees of enterprises under federal jurisdiction and to certain Crown Corporations. One group to which it applies includes undertakings and businesses connecting one province with another, such as: air transport, railways, highway transport, pipelines, ferries and canals, tunnels and bridges, telephone systems, and telegraph and cable systems. The Code also applies to: shipping, radio and television broadcasting, banks, and primary fishing when the fishermen work for wages. The Code applies, as well, to employment in those works, undertakings and businesses that, although wholly within one province, have been declared byParliament to be "for the general advantage of Canada, or for the advantage of two or more of the provinces", such as: uranium mining

and processing, grain elevators, and flour and feed mills. The Code applies to the many federal Crown Corporations that are engaged in production, trading or service operations of a commercial or industrial nature. Finally, the Canada Labour Code applies to the Public Service of Canada.

The Canada Labour Code empowers the Minister of Labour to establish Safety Committees "where, in the opinion of the Minister, conditions ... warrant the establishment of such a committee." The powers and functions of the Committee, as spelled out in subsection (4) of section 84.1, include "requesting from an employer or any other person acting on his behalf such information as the committee considers necessary to identify existing or potential hazards with respect to materials, processes or equipment..." Safety officers are given similar powers under the Canada Labour Code. Section 91(2)(c) states: "A safety officer may, in the performance of his duties, require an employer to make or furnish full and correct statements, either orally or in writing in such forms as may be required, respecting the conditions of work affecting the safety or health of all or any of his employees, and the materials and equipment used by them in their employment." It might seem that such powers would enable the committees or safety officers to obtain any information about industrial chemicals that would otherwise be printed on a label, under the kind of regulations that the OSHA draft labelling standard outlines. In practice, however, there is a definite disadvantage to this approach. Often the employer does not have this information, and cannot easily obtain it.

Regulations in effect under the authority of the Canada Labour Code include the Canada Dangerous Substances Regulations. These regulations apply to any "dangerous substance" used in the workplace, a "dangerous substance" being defined as "any substance that, because of a property it possesses, is

dangerous to the safety or health of any person who is exposed to it." This definition, of course, limits the application of the regulations to known dangerous substances, and overlooks the need for identifying substances which are not yet known to be dangerous, but which may in the future prove to have long-term health effects.

Sections 15 to 18 of the Canada Dangerous Substances Regulations deal with "Warning and Training of Employees" and are thus intended to accomplish a purpose similar to one of the aims of the OSHA draft standard on labelling. Sections 19 and 20 deal with containers and labelling and thus are also comparable to the OSHA draft standard in purpose. The employer is given a choice of three labelling standards: the Canadian Transport Commission Regulations for the Transportation of Dangerous Commodities by Rail; the Manufacturing Chemists Association Guide to Precautionary Labelling of Hazardous Chemicals; or "any other labelling standard that (i) identifies the dangerous substance in the container by its common name; and (ii) lists the principal danger or dangers of that substance." These requirements are somewhat comparable to those of the OSHA draft standard, but there are arguments against a reliance on consensus standards of a manufacturers' organization. Moreover, the onus is on the employer to provide this labelling, and again often the employer does not know the ingredients of substances used in his plant.

In discussing legislation on occupational safety and health which has application to the labelling issue, and which applies to jurisdictions more limited than the Canada-wide application of the six federal statutes examined above, we must, of course, take into consideration provincial legislation. In Canada it is the provinces, not the federal government, which have the greater responsibility in the occupational health and safety field. We shall limit ourselves for purposes of illustration to a consideration of

the legislation of two provinces, Alberta and Saskatchewan. Alberta has legislation dealing specifically, in at least one section, with the labelling of chemicals in the workplace. Saskatchewan's Occupational Health and Safety Act provides for the furnishing of information by the employer, and this exemplifies the basic principle of providing for the worker's "right to know" what substances he is working with.

Section 24(1) of the Alberta Occupational Health and Safety Act deals with the issue of the providing of information regarding substances used or stored on the work site. This applies only to "designated" substances, however, and is similar in that regard to, for example, the federal Hazardous Products Act; that is, it has the limitation of applying only to certain known "hazardous", or in this case "designated" substances. Also, the onus for providing this information is placed on "the person responsible for" the work site, and not on the manufacturer or formulator of the chemical. The information required is quite comprehensive: "(a) the common name and chemical name of that substances, (b) the chemical composition and the physical and chemical properties of that substances, (c) the toxicological information respecting that substance, (d) the effect of exposure or contact on humans of that substance, (e) the protective measures used in respect of that substance, (f) the methods of disposal of that substance, and (g) such other information as the Director prescribes." Alberta also has regulations in draft form which would provide for obtaining information on new substances, not listed in either of their two lists of "designated" substances. This would place the onus on the employer to provide such information, but it would apply only to "toxic" chemical substances and so would not apply to new chemicals the toxicity of which is an "unknown quantity."

The Saskatchewan Occupational Health and Safety Act empowers the

Lieutenant Governor in Council, in Section 13(f) to make regulations "imposing requirements with respect to the testing, labelling or examination of any substance." Not only is labelling introduced, but also instruction of workers, another provision of the OSHA draft standard on labelling, is provided for (in subsection (n) of the same section): the Lieutenant Governor in Council may make regulations "imposing requirements with respect to the instruction, training and supervision of workers."

In Saskatchewan, the Director of the Occupational Health and Safety Branch can, under Section 22 of the Act, direct any employer to reveal the chemical composition of any substance used in the workplace. Actually, Section 22 is quite general and could be applied to the manufacturer or formulator of a chemical used in the workplace (the wording is "For the purpose of obtaining any information which the division needs for the performance of its duties and the exercise of its powers, the director may direct any person to furnish him with such information..."), but in most cases the manufacturer or formulator of such substances is not located in Saskatchewan, and so is outside the jurisdiction of the Saskatchewan authorities. The Branch routinely requests information about the ingredients of workplace chemicals from out-of-province formulators, but there is little that can be done to enforce compliance. Saskatchewan Occupational Health Committees (these are joint worker-management committees) have duties which include (Section 24(4)) "participation in the identification and control of health and safety hazards within the place of employment." There is an onus on the employer, too, (in Section 3) to "consult and co-operate with the occupational health committee... for the purpose of resolving concerns on matters of health, safety and welfare at work." These provisions can be applied to the labelling issue, but again, unless the requirement for labelling and disclosing the ingredients of work-

little can be accomplished in practice.

The Canada Labour Code and the Occupational Health and Safety legislation of any of the provinces are applicable to jurisdictions too limited for effective action. Perhaps this point can best be understood in terms of the economics of scale with respect to marketing. Any effective labelling must be applied at the point of manufacture or formulation; it is extremely difficult and sometimes impossible for the employer or even, say, a provincial regulatory authority to obtain information about the ingredients of substances, while the manufacturer or formulator knows what he is putting into his product (although even here, it has been found by NIOSH, the ingredients may themselves be brand-name substances protected by "trade secrets"). But an authority with a limited jurisdiction cannot have much influence on a large out-of-province or foreign manufacturer. If Monsanto, American Cyanamid, Du Pont, or any other multi-national chemical manufacturer were required to provide labelling at the point of manufacture for all chemicals sold to Saskatchewan, say, they could obviously ignore such requirements with impunity. The most they could lose would be a very small portion of their market--and they could probably rest assured that they would not even lose that, because their customers in Saskatchewan would need their chemicals to carry on their operations, and the Saskatchewan government would be under pressure to back down on enforcement. The point is that authorities with limited jurisdiction, such as the provinces, do not separately have enough economic "clout" to force chemical manufacturers to provide fully descriptive labelling at the point of manufacture. Only the provinces acting in concert with one another and with the federal government could bring about effective labelling legislation along the lines of the OSHA draft standard.

At present, the Canadian Association of Administrators of Labour Legislation (CAALL) are considering the need for such concerted action, but no proposal has yet come to public view. Indeed the labelling of industrial chemicals is not considered a public issue in Canada, at least not nearly to the extent that it is regarded as such in the United States. Perhaps this is merely a reflection of the differences between the political and regulatory processes of the two countries--but such a response merely begs the question. The point is that millions of workers are exposed to unknown chemicals in Canadian workplaces every day; some of these substances could cause (indeed, some already have caused) disease and even death; but nothing can be done because workers, and sometimes even their employers and government regulators, do not know what these chemicals are. Incidentally, besides the health risk to workers, inadequate labelling puts the employer (as a consumer of industrial chemicals) at the disadvantage of not knowing what he is getting for his money; he might be able to substitute a cheaper generic chemical for his regular brand-name product if he knew its ingredients. Yet, despite both humane and economic arguments for labelling, the issue is not being debated in any public forum in Canada.

Adequate federal laws on labelling of industrial substances are urgently needed to protect worker health. There is a need for the concerted action of the provinces and the federal government to formulate policy on this issue and to take legislative action. And there is a need for the issue to be made public so that it can be debated openly in order to best arrive at a conception of the best interests of Canadians.

NOTES

1 The Occupational Safety and Health Administration Draft of Proposed Chemical Labeling Standard is printed in, among other locations, the Bureau of National Affairs publication, Occupational Safety and Health Reporter 7: 1254-1256, 1978; and National Safety News 118: 54-58, 1978.

2 The distinction between such terms as "trade name", "common name", "generic name", "chemical name", etc. would seemingly be fairly straightforward, but is in fact rather technical and complicated. There are basically three categories of names (with close synonyms and sub-categories applying to each): (1) chemical name, (2) proprietary name, and (3) nonproprietary name. The chemical name of a substance is the most precise and unequivocal, of course, but unfortunately most chemical names are too complicated to be remembered easily, especially by those who are not chemists. Often a code number is assigned to a new chemical by the public agency or commercial company first carrying out an investigation of it, and sometimes the chemical becomes widely known by this number (e.g., the rodenticide monosodium fluoroacetate is called "compound 1080"). Proprietary names are those owned by a company and used to designate their products (these are frequently, but incorrectly, called "trade names"; actually, "trade name" means the company name). The terms "nonproprietary name", "common name", "generic name", and "coined name" may be used interchangeably. Further, a nonproprietary name becomes an "approved name" if it is issued by an authoritative private or governmental agency, and it becomes an "official name" if issued by a governmental agency under authority of a law specifically authorizing the establishment of names. For further information on nomenclature, see Wayland J. Hayes, Jr., Toxicology of Pesticides (Baltimore: Williams and Wilkins, 1975), pp. 29-31.

3 Richard Grawey, "Carcinogens should not be protected under a 'trade secrets' umbrella", Occupational Health and Safety 47, 3: 24-28, 1978.

4 See Jack Finnegan, "A Dangerous Business: Pesticide Formulation", Job Safety and Health, 6, 4: 20-24, 1978.

5 T.R. Alff, "Symbols for materials handling", National Safety News 110, 7: 76-77, 1974.

6 "Inmont launches new labeling program", Accident Prevention 25, 8: 8, 1978.

7 W.E. Porter et al., "A system for labeling and control of toxic materials in a large research facility," American Industrial Hygiene Association Journal 38, 1: 51-56, 1977.

8 See, for example, "New chemical labelling law", Occupational Health 30, 4: 153-4, 1978.

NOTES (Cont'd)

9 "Disclosing formulae could damage market--Du Pont", Occupational Health 30, 7: 293-4, 1978.

10 "Chemical Dangers in the Workplace: Thirty-fourth Report by the Committee on Government Operations", Sept. 27, 1976. 94th Congress, 2nd Session; House Report No. 94-1688.

11 Thomas H. Corbett, Cancer and Chemicals (Chicago: Nelson-Hall, 1977), p. x.

12 Corbett, pp. 44-45.